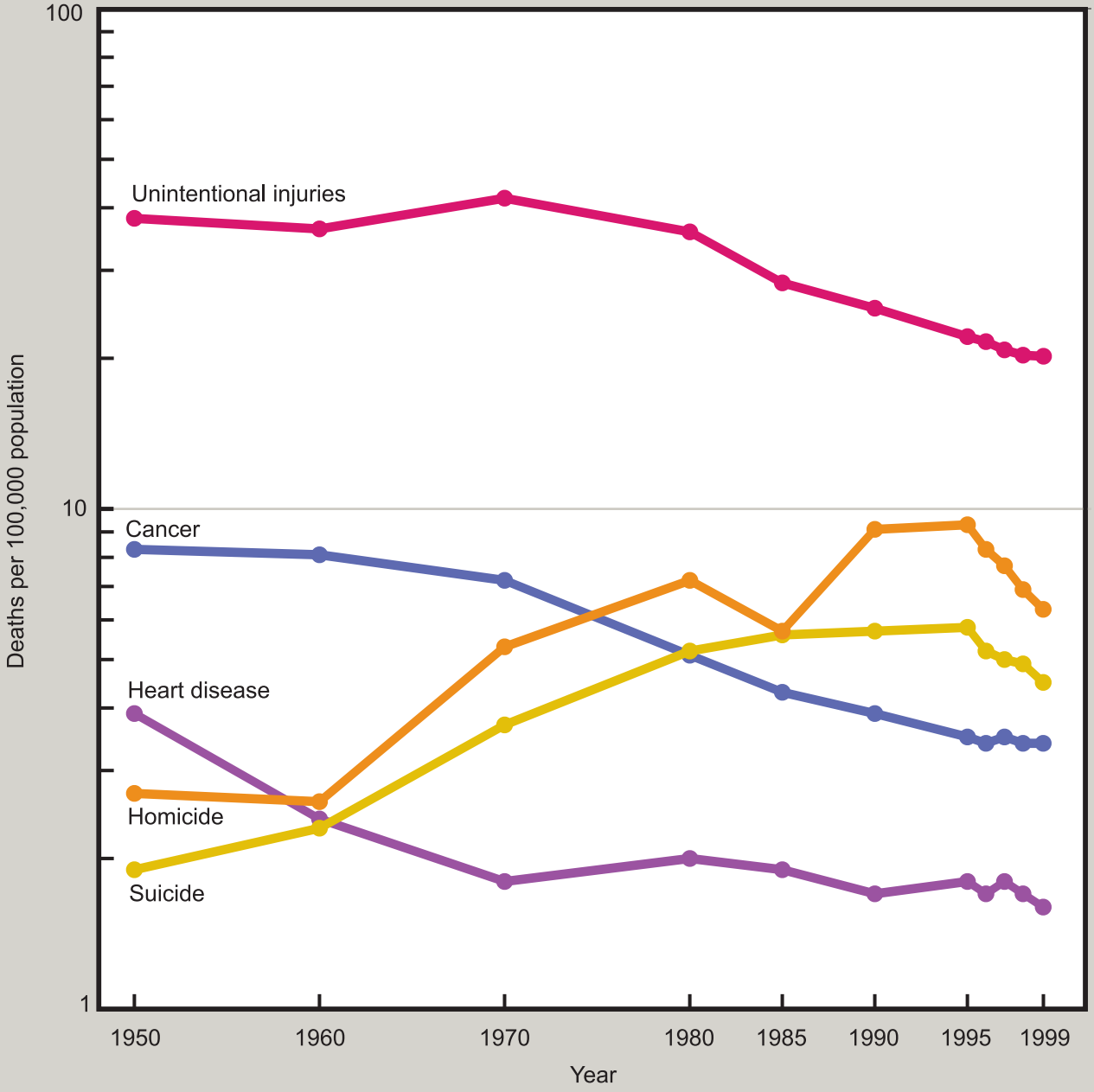
Figure 21. Death rates for leading causes of death among persons 1-24 years of age: United States, 1950-99



NOTES: Death rates are age adjusted to the year 2000 standard population using three age groups: 1-4 years, 5-14 years, and 15-24 years. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD-6), 1960 death rates on the ICD-7, 1970 death rates on the ICDA-8, 1980-1998 death rates on ICD-9, and 1999 death rates on the ICD-10. Causes of death shown are the five leading causes of death among persons 1-24 years of age in 1999. See Data Table for data points graphed and additional notes. Data are plotted on the log scale.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Child and Young Adult Mortality

During the past 50 years mortality among children and young adults (1–24 years of age) has declined by more than one-half. In 1999 the five leading causes of death for this age group were related to either injury or chronic diseases. In 1950, in contrast, two of the five leading causes of death were infectious diseases (influenza/pneumonia and tuberculosis).

Unintentional injuries have been the leading cause of death for children and young adults throughout the past 50 years. Death rates for unintentional injuries have been declining since 1970 (figure 21). In 1999 more than 40 percent of all deaths to persons 1–24 years of age resulted from unintentional injuries (figure 22). Nearly three-quarters of these deaths occurred to persons 15–24 years of age (1).

Homicide and suicide were the second and third leading causes of death in this age group in 1999. Most of these deaths were among persons 15–24 years of age: 86 percent of homicides and 94 percent of suicides in this age group occurred to persons 15–24 years of age. Between 1960 and the mid-1990s, homicide and suicide rates among persons 1–24 years of age increased. Since the mid-1990s homicide and suicide rates have declined.

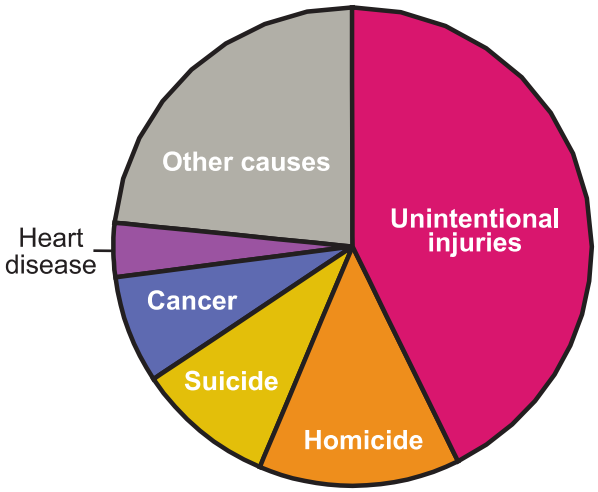
Homicide and suicide rates vary by age, sex, and race. Males 15–24 years of age are at substantially higher risk of homicide and suicide than younger persons or females. Among males 15–24 years of age, homicide rates for black males were eight times as great as for white males in 1999 (*Health, United States, 2002*, tables 46 and 47).

Death rates for the other leading causes of death, cancer and heart disease, have also declined with the greatest decline in cancer mortality occurring during 1960–95 and the greatest decline in heart disease mortality during 1950–70. In 1999 cancer and heart disease together accounted for about 10 percent of deaths among persons 1–24 years of age.

Reference

1. Hoyert DL, Arias E, Smith BL, Murphy SL, Kochanek KD. Deaths: Final data for 1999. National vital statistics reports; vol 49 no 8. Hyattsville, Maryland: National Center for Health Statistics. 2001.

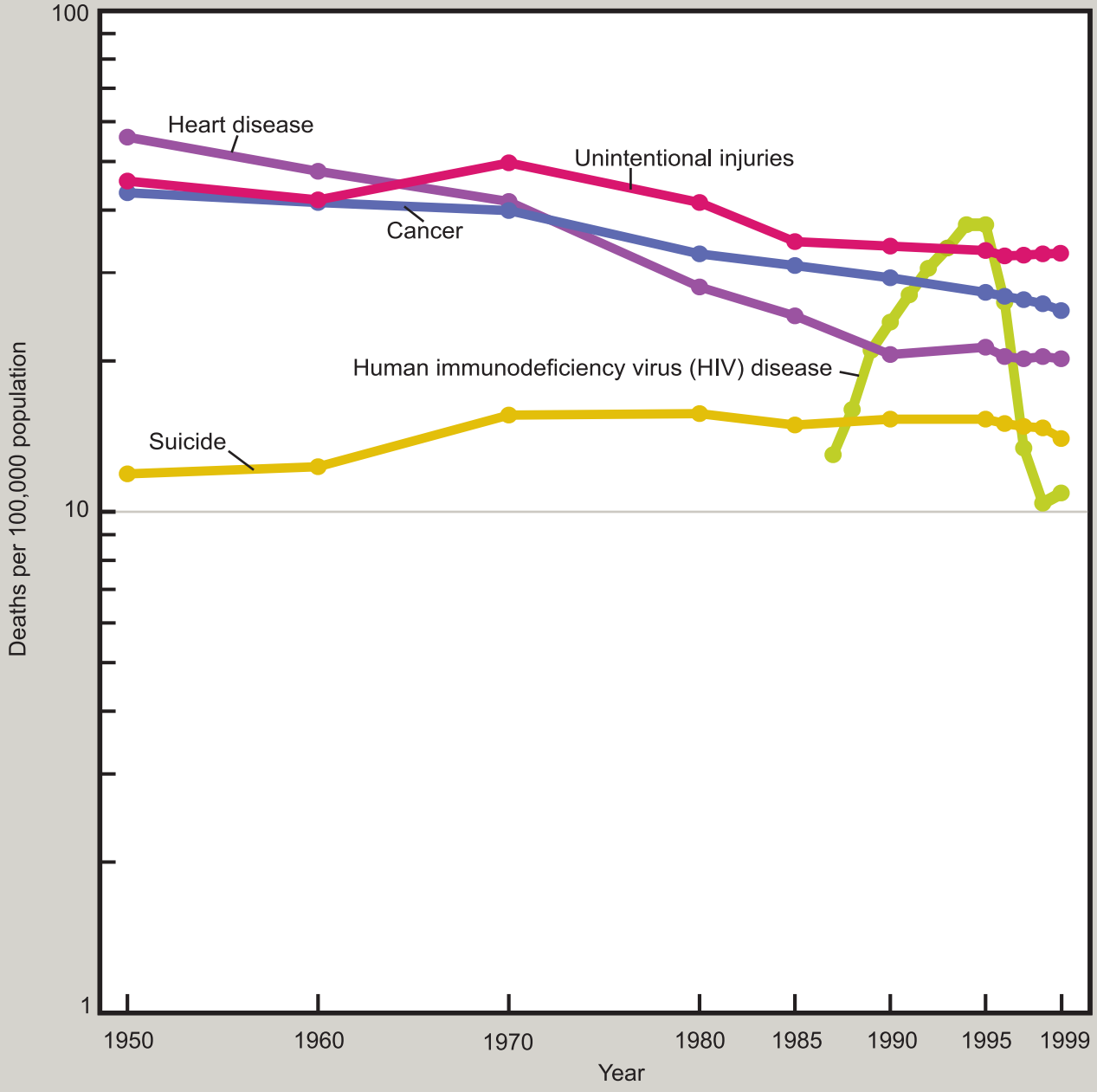
Figure 22. Percent of deaths due to leading causes of death among persons 1-24 years of age: United States, 1999



NOTE: See Data Table for data points graphed and additional notes.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Figure 23. Death rates for leading causes of death among persons 25-44 years of age: United States, 1950-99



NOTES: Death rates are age adjusted to the year 2000 standard population using two age groups: 25-34 years and 35-44 years. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD-6), 1960 death rates on the ICD-7, 1970 death rates on the ICDA-8, 1980-1998 death rates on ICD-9, and 1999 death rates on the ICD-10. Causes of death shown are the five leading causes of death among persons 25-44 years of age in 1999. See Data Table for data points graphed and additional notes. Data are plotted on the log scale.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Adult Mortality: 25–44 Years of Age

Since 1950 mortality among adults 25–44 years of age has declined by more than 40 percent. Underlying the overall decline in the death rate have been both favorable and unfavorable trends in the leading causes of death (figure 23). Four of the five leading causes of death in 1999 were also leading causes of death in 1950. But tuberculosis, which was one of the top five causes of death in 1950, is no longer a significant cause of death for adults 25–44 years of age.

Mortality from heart disease has declined by more than 60 percent since 1950, with most of the decrease occurring by 1990. Mortality from unintentional injury and cancer has also declined, with most of the decrease occurring after 1970. Altogether unintentional injury, cancer, and heart disease, the three leading causes of death among persons 25–44 years of age in 1999, accounted for about one-half of all deaths in this age group (figure 24).

In contrast to the declines for the top three causes of death, the suicide rate among persons 25–44 years rose between 1950 and 1980 but has declined slightly since 1980. Suicide, the fourth leading cause of death among young working-age adults in 1999, was responsible for 9 percent of deaths in this age group.

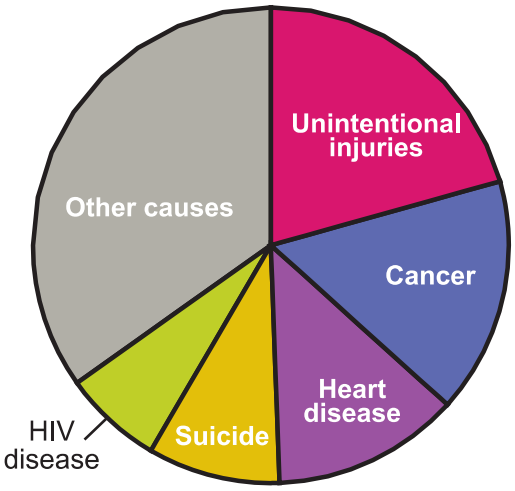
The fifth leading cause of death in 1999, human immunodeficiency virus (HIV) disease, has been an important cause of mortality among persons 25–44 years of age since the late 1980s (1). After rising rapidly in the late 1980s and the early 1990s, the HIV disease death rate began to fall sharply in the late 1990s with the introduction of new antiretroviral therapies.

HIV disease death rates among persons 25–44 years of age vary substantially by sex, race, and Hispanic origin. The risk of death is higher for males than females and is much higher for black persons and Hispanic persons than for those in other racial and ethnic groups. The HIV disease death rate for black females, for example, was 12 times the rate for white females in 1999 (*Health, United States, 2002*, table 43).

Reference

1. Centers for Disease Control and Prevention. HIV and AIDS—United States, 1981–2000. MMWR 50(21):430–4. 2001.

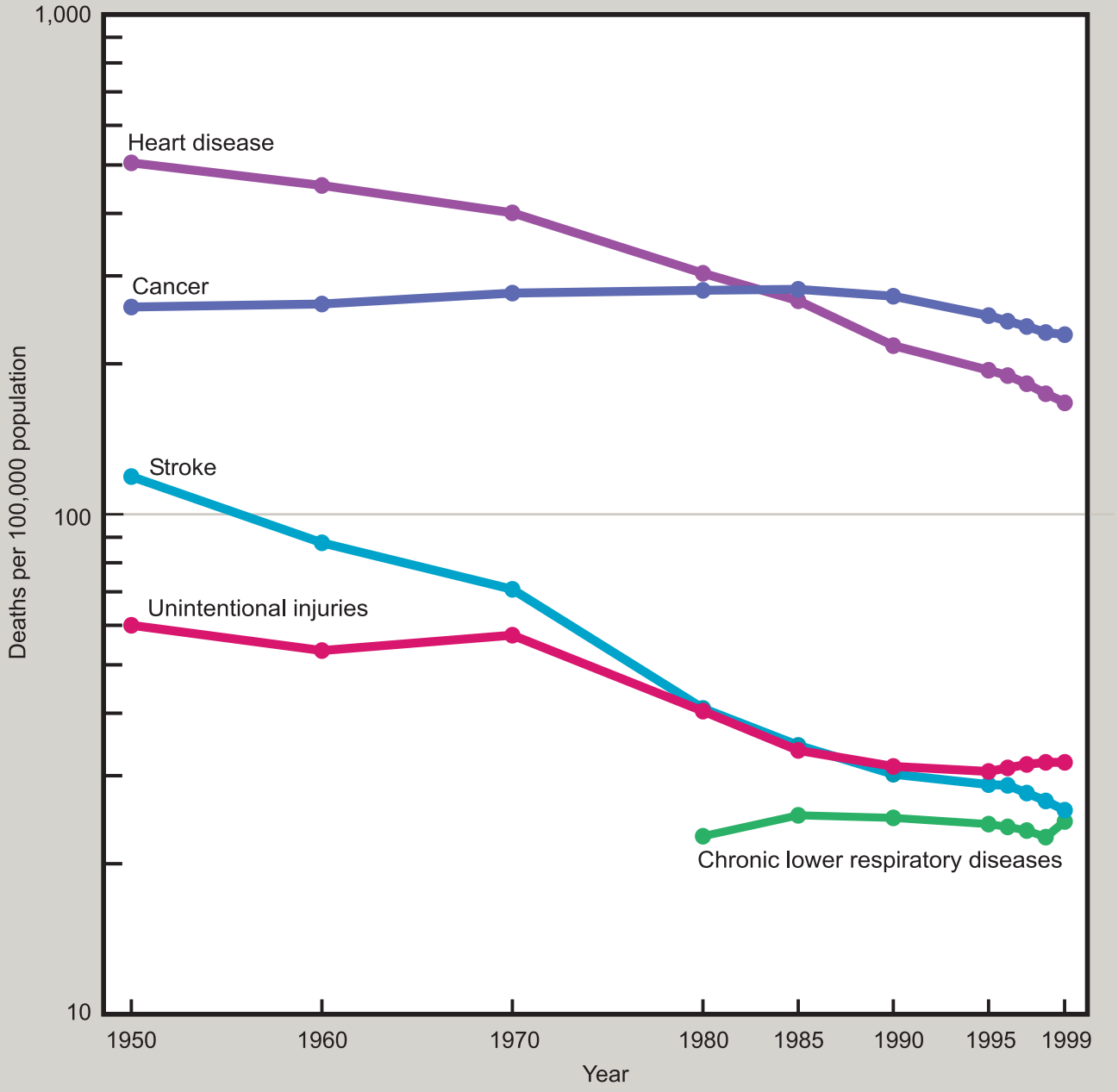
Figure 24. Percent of deaths due to leading causes of death among persons 25-44 years of age: United States, 1999



NOTE: See Data Table for data points graphed and additional notes.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Figure 25. Death rates for leading causes of death among persons 45-64 years of age: United States, 1950-99



NOTES: Death rates are age adjusted to the year 2000 standard population using two age groups: 45-54 years and 55-64 years. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD-6), 1960 death rates on the ICD-7, 1970 death rates on the ICDA-8, 1980-1998 death rates on ICD-9, and 1999 death rates on the ICD-10. Causes of death shown are the five leading causes of death among persons 45-64 years of age in 1999. See Data Table for data points graphed and additional notes. Data are plotted on the log scale.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Adult Mortality: 45–64 Years of Age

Death rates for persons 45–64 years of age have declined substantially over the past 50 years. Since 1950 mortality in this age group has decreased by nearly 50 percent overall. Four of the five leading causes of death in 1999 were also the leading causes of death in 1950. Tuberculosis, which ranked in the top five causes in 1950, was the cause of only a small number of deaths in 1999.

The death rates for heart disease and stroke among persons 45–64 years of age declined substantially between 1950 and 1999 (figure 25). During this period the death rate for heart disease declined by almost 70 percent and the death rate for stroke by nearly 80 percent. Advances in the prevention and treatment of heart disease and stroke rank among the major public health achievements of the 20th century (1).

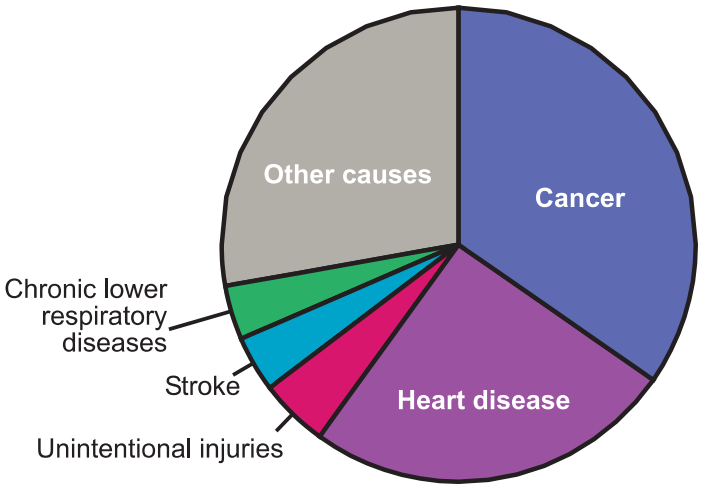
In contrast to the large declines in heart disease and stroke mortality, the death rate for cancer among persons 45–64 years of age rose slowly through the 1980s and then declined. Cancer was the leading cause of death among persons 45–64 years of age, accounting for more than one-third of the deaths in this age group in 1999 (figure 26).

In 1999 cancer, heart disease, stroke, and chronic lower respiratory diseases together accounted for nearly 70 percent of all deaths in this age group. Both biological and socioeconomic factors are strongly associated with death among older working-age adults. Men had a higher death rate than women, and adults with a high school education or less had a death rate more than twice as high as the rate for adults with more than a high school education in 1999 (2).

References

1. Centers for Disease Control and Prevention. Achievements in public health, 1900–1999: Decline in deaths from heart disease and stroke—United States, 1900–1999. MMWR 48(30):649–56. 1999.
2. Hoyert DL, Arias E, Smith BL, Murphy SL, Kochanek KD. Deaths: Final data for 1999. National vital statistics reports; vol 49 no 8. Hyattsville, Maryland: National Center for Health Statistics. 2001.

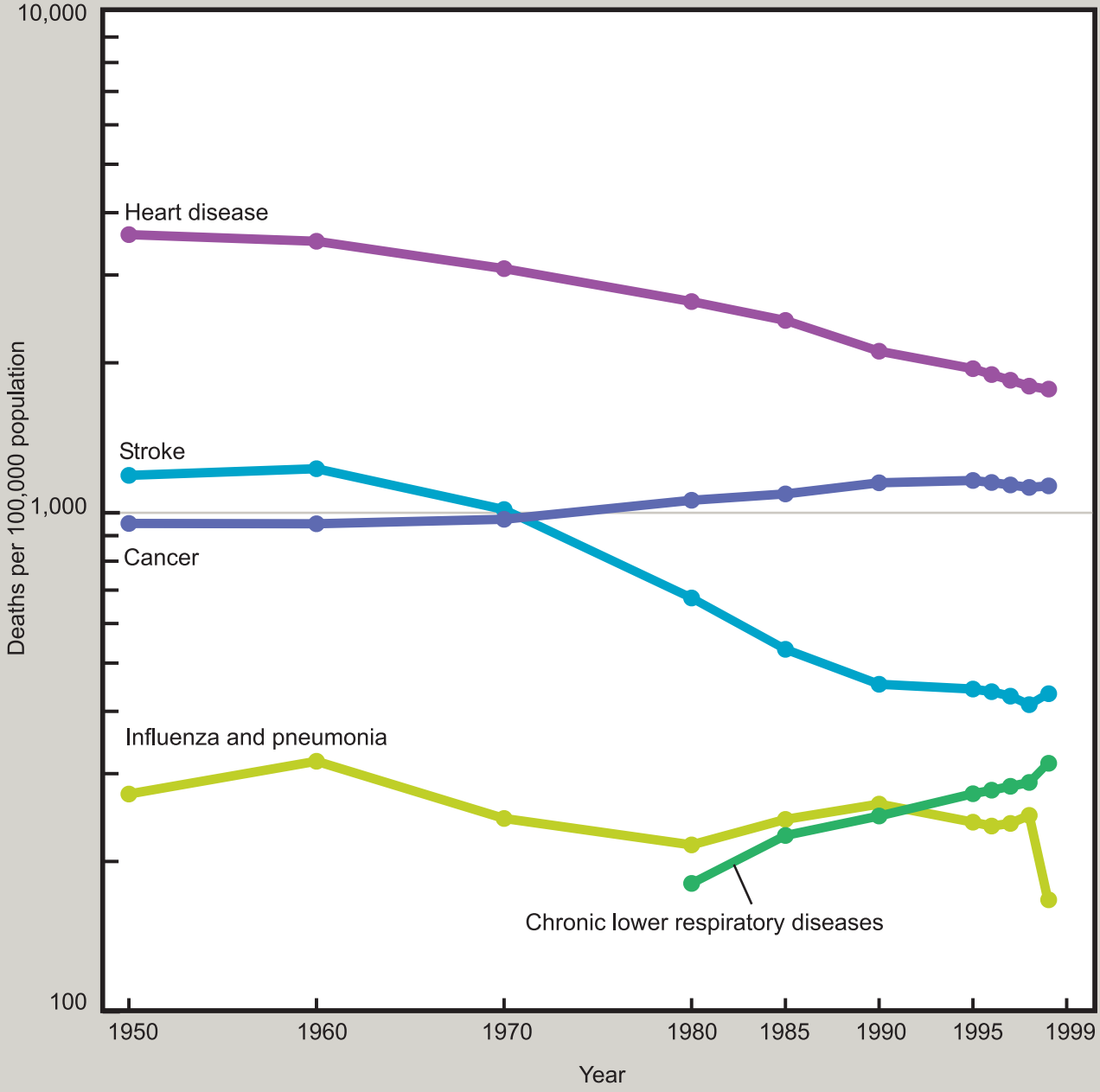
Figure 26. Percent of deaths due to leading causes of death among persons 45-64 years of age: United States, 1999



NOTE: See Data Table for data points graphed and additional notes.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Figure 27. Death rates due to leading causes of death among persons 65 years of age and over: United States, 1950-99



NOTES: Death rates are age adjusted to the year 2000 standard population using three age groups: 65-74 years, 75-84 years, and 85 years and over. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD-6), 1960 death rates on the ICD-7, 1970 death rates on the ICDA-8, 1980-1998 death rates on ICD-9, and 1999 death rates on the ICD-10. Causes of death shown are the five leading causes of death among persons 65 years of age and over in 1999. See Data Table for data points graphed and additional notes. Data are plotted on the log scale.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Adult Mortality: Elderly

Three-quarters of all deaths in the United States occur among persons 65 years of age and over (*Health, United States, 2002*, table 33). During the past 50 years overall death rates have declined by about one-third for older persons. Chronic diseases have caused most of the deaths among the elderly throughout the 50-year period.

The death rate for heart disease among the elderly declined between 1950 and 1999 by more than 50 percent and the death rate for stroke by more than 60 percent (figure 27). Trends in the other leading causes of death among the elderly varied. The death rate for cancer, the second leading cause of death for the elderly in 1999, rose between 1950 and 1995 and has decreased slightly since 1995. The death rate for the fourth leading cause of death, chronic lower respiratory diseases, has increased since 1980 reflecting, in large part, the effects of cigarette smoking (1).

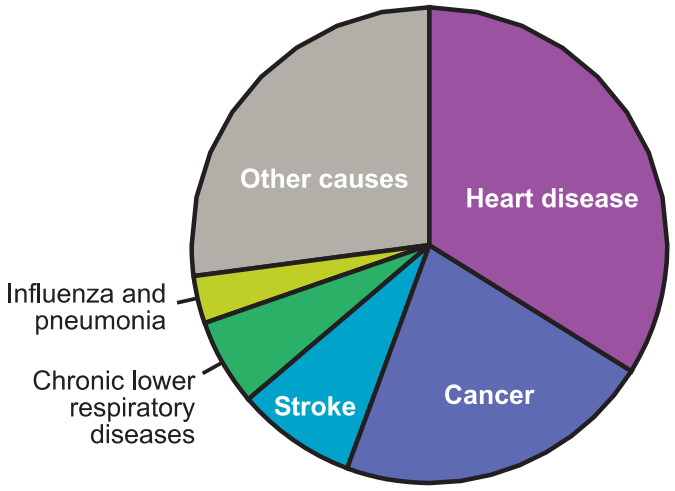
The large difference in the death rate due to influenza and pneumonia between 1998 and 1999 reflects, in large part, changes in the coding of this cause of death. A comparison of the comparability-modified 1998 rate with the 1999 rate indicates a decline of only 3 percent (see data table for figure 27 and Appendix II, Comparability ratio).

In 1999 the underlying cause in over one-third of the deaths to persons 65 years of age and over was heart disease (figure 28). The second leading cause of death, cancer, accounted for about a fifth of all deaths. Each of the other leading causes of death (stroke, chronic lower respiratory diseases, and influenza and pneumonia) accounted for less than 10 percent of deaths to the elderly.

Reference

1. Office of the Surgeon General, U.S. Public Health Service. The health consequences of smoking: Chronic obstructive lung disease. Rockville, Maryland: U.S. Department of Health and Human Services. 1984.

Figure 28. Percent of deaths due to leading causes of death among persons 65 years of age and over: United States, 1999



NOTE: See Data Table for data points graphed and additional notes.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 21. Death rates for leading causes of death among persons 1–24 years of age: United States, 1950–99

Year	1–24 years						15–24 years					
	All causes	Unintentional injuries	Homicide	Suicide	Cancer	Heart disease	All causes	Unintentional injuries	Homicide	Suicide	Cancer	Heart disease
	Deaths per 100,000 population						Deaths per 100,000 population					
1950	100.8	38.1	2.7	1.9	8.3	3.9	128.1	54.8	5.8	4.5	8.6	6.8
1960	81.2	36.3	2.6	2.3	8.1	2.4	106.3	56.0	5.6	5.2	8.3	4.0
1970	83.6	41.8	5.3	3.7	7.2	1.8	127.7	68.7	11.3	8.8	8.3	3.0
1980	70.7	35.8	7.2	5.2	5.1	2.0	115.4	61.7	15.4	12.3	6.3	2.9
1985	58.6	28.3	5.7	5.6	4.3	1.9	94.9	47.9	11.7	12.8	5.4	2.8
1990	58.4	25.2	9.1	5.7	3.9	1.7	99.2	43.9	19.7	13.2	4.9	2.5
1995	55.2	22.1	9.3	5.8	3.5	1.8	95.3	38.5	20.0	13.3	4.6	2.9
1996	52.1	21.6	8.3	5.2	3.4	1.7	89.6	38.1	17.9	12.0	4.5	2.7
1997	49.9	20.8	7.7	5.0	3.5	1.8	86.2	36.5	16.6	11.4	4.5	3.0
1998	47.8	20.3	6.9	4.9	3.4	1.7	82.3	35.9	14.6	11.1	4.6	2.8
1998 (Comparability-modified)	47.8	20.9	6.9	4.9	3.4	1.7	82.3	37.0	14.6	11.1	4.6	2.8
1999	47.0	20.2	6.3	4.5	3.4	1.6	81.2	36.2	13.2	10.3	4.6	2.8

NOTES: Death rates for 1–24 years of age are age adjusted to the year 2000 standard population using three age groups: 1–4 years, 5–14 years, and 15–24 years. Causes of death shown are the five leading causes of death among persons 1–24 years of age in 1999. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD–6), 1960 death rates on the ICD–7, 1970 death rates on the ICDA–8, and 1980–98 death rates on the ICD–9. 1998 (Comparability-modified) death rates use comparability ratios to adjust the rate to be comparable to records classified according to the ICD–10. 1999 death rates are based on the ICD–10. Comparability ratios for selected ICD revisions are available at www.cdc.gov/nchs/data/comp2.pdf. Homicide refers to deaths due to assault. Suicide refers to deaths from intentional self-harm. Suicide is not a cause of death for children under 5 years of age. Cancer refers to malignant neoplasms. See Appendix II, Age adjustment, Cause of death, and Comparability ratio. See related *Health, United States, 2002,* tables 36, 37, 39, 46, and 47.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 22. Percent of deaths due to leading causes of death among persons 1–24 years of age: United States, 1999

Cause of death	1–24 years	15–24 years
	Percent	
Unintentional injuries	42.9	44.5
Homicide	13.4	16.3
Suicide	9.5	12.7
Cancer	7.3	5.6
Heart disease	3.5	3.5
Other causes	23.5	17.3

NOTES: 1999 deaths are coded according to the tenth revision of the International Classification of Disease (ICD–10). Homicide refers to deaths due to assault. Suicide refers to deaths from intentional self-harm. Suicide is not a cause of death for children under 5 years of age. Cancer refers to malignant neoplasms. See Appendix II, Cause of death. See related *Health, United States, 2002,* tables 37, 39, 46, and 47.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 23. Death rates for leading causes of death among persons 25–44 years of age: United States, 1950–99

Year	All causes	Unintentional injuries	Cancer	Heart disease	Suicide	Year	Human immuno-deficiency virus (HIV) disease
	Deaths per 100,000 population					Deaths per 100,000 population	
1950	276.9	45.7	43.3	55.9	11.9	1987	13.0
1960	229.8	41.9	41.4	47.8	12.3	1988	16.0
1970	243.1	49.7	39.9	41.6	15.6	1989	21.0
1980	185.9	41.4	32.7	28.1	15.7	1990	23.9
1985	169.8	34.6	31.0	24.6	14.9	1991	27.1
1990	185.0	33.9	29.3	20.6	15.3	1992	30.6
1995	195.6	33.2	27.4	21.3	15.3	1993	33.6
1996	178.3	32.4	26.9	20.4	15.0	1994	37.4
1997	163.1	32.5	26.5	20.2	14.8	1995	37.4
1998	158.7	32.7	26.0	20.4	14.7	1996	26.2
1998 (Comparability-modified)	158.7	33.7	26.1	20.1	14.6	1997	13.4
1999	157.9	32.8	25.2	20.2	14.0	1998	10.4
						1998 (Comparability-modified)	12.0
						1999	10.9

NOTES: Death rates are age adjusted to the year 2000 standard population using two age groups: 25–34 years and 35–44 years. Causes of death shown are the five leading causes of death among persons 25–44 years of age in 1999. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD–6), 1960 death rates on the ICD–7, 1970 death rates on the ICDA–8, and 1980–98 death rates on the ICD–9. 1998 (Comparability-modified) death rates use comparability ratios to adjust the rate to be comparable to records classified according to the ICD–10. 1999 death rates are based on the ICD–10. Comparability ratios for selected ICD revisions are available at www.cdc.gov/nchs/data/comp2.pdf. Cancer refers to malignant neoplasms. Suicide refers to deaths from intentional self-harm. See Appendix II, Age adjustment, Cause of death, and Comparability ratio. See related *Health, United States, 2002,* tables 36, 37, 39, 43, and 47.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 24. Percent of deaths due to leading causes of death among persons 25–44 years of age: United States, 1999

Cause of death	Percent
Unintentional injuries	20.8
Cancer	15.9
Heart disease	12.8
Suicide	8.9
Human immunodeficiency virus (HIV) disease	6.9
Other causes	34.8

NOTES: 1999 deaths are coded according to the tenth revision of the International Classification of Disease (ICD–10). Cancer refers to malignant neoplasms. Suicide refers to deaths from intentional self-harm. See Appendix II, Cause of death. See related *Health, United States, 2002,* tables 37, 39, 43, and 47.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 25. Death rates for leading causes of death among persons 45–64 years of age: United States, 1950–99

Year	All causes	Cancer	Heart disease	Unintentional injuries	Stroke	Chronic lower respiratory diseases
	Deaths per 100,000 population					
1950	1,265.3	259.8	504.8	60.0	119.0	- - -
1960	1,140.7	263.4	454.9	53.4	87.7	- - -
1970	1,094.9	277.0	401.0	57.3	70.8	- - -
1980	883.5	280.6	303.5	40.4	40.9	22.7
1985	823.7	281.9	267.4	33.7	34.5	25.0
1990	757.6	273.1	217.5	31.3	30.2	24.7
1995	717.2	249.8	194.2	30.6	28.8	24.0
1996	700.6	243.4	189.5	31.1	28.7	23.7
1997	679.4	237.5	182.5	31.6	27.7	23.3
1998	662.0	231.1	174.3	31.9	26.7	22.6
1998 (Comparability-modified)	662.0	232.7	171.8	32.9	28.3	23.7
1999	660.9	228.8	167.1	31.9	25.6	24.3

- - - Data not available.

NOTES: Death rates are age adjusted to the year 2000 standard population using two age groups: 45–54 years and 55–64 years. Causes of death are the five leading causes of death among persons 45–64 years of age in 1999. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD–6), 1960 death rates on the ICD–7, 1970 death rates on the ICDA–8, and 1980–98 death rates on the ICD–9. 1998 (Comparability-modified) death rates use comparability ratios to adjust the rate to be comparable to records classified according to the ICD–10. 1999 death rates are based on the ICD–10. Comparability ratios for selected ICD revisions are available at www.cdc.gov/nchs/data/comp2.pdf. Death rates for chronic lower respiratory diseases are not available prior to 1980 because of changes in medical terminology and the classification of these terms in the relevant ICD revisions. Cancer refers to malignant neoplasms. Stroke refers to cerebrovascular diseases. See Appendix II, Age adjustment, Cause of death, and Comparability ratio. See related *Health, United States, 2002,* tables 37, 38, 39, and 42.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 26. Percent of deaths due to leading causes of death among persons 45–64 years of age: United States, 1999

Cause of death	Percent
Cancer	34.6
Heart disease	25.3
Unintentional injuries	4.8
Stroke	3.9
Chronic lower respiratory diseases	3.7
Other causes	27.7

NOTES: 1999 deaths are coded according to the tenth revision of the International Classification of Disease (ICD–10). Cancer refers to malignant neoplasms. Stroke refers to cerebrovascular diseases. See Appendix II, Cause of death. See related *Health, United States, 2002,* tables 37, 38, 39, and 42.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 27. Death rates due to leading causes of death among persons 65 years of age and over: United States, 1950–99

Year	All causes	Heart disease	Cancer	Stroke	Chronic lower respiratory diseases	Influenza and pneumonia
	Deaths per 100,000 population					
1950	7,933.3	3,613.3	952.4	1,188.8	- - -	273.0
1960	7,536.4	3,503.6	950.9	1,225.9	- - -	317.7
1970	6,717.5	3,089.4	971.0	1,015.5	- - -	243.9
1980	5,900.2	2,652.9	1,060.2	675.3	180.7	215.8
1985	5,694.0	2,431.0	1,091.2	532.6	225.5	242.9
1990	5,395.9	2,108.8	1,149.3	453.1	246.8	260.7
1995	5,313.8	1,946.1	1,161.6	443.3	273.5	239.7
1996	5,265.9	1,893.6	1,150.4	437.9	277.9	235.5
1997	5,226.6	1,844.0	1,137.9	428.8	282.9	238.4
1998	5,181.4	1,794.8	1,124.8	412.4	288.0	247.4
1998 (Comparability-modified)	5,181.4	1,769.4	1,132.5	436.7	301.8	172.8
1999	5,237.5	1,771.5	1,132.8	434.0	314.6	167.5

- - - Data not available.

NOTES: Death rates are age adjusted to the year 2000 standard population using three age groups: 65–74 years, 75–84 years, and 85 years and over. Causes of death shown are the five leading causes of death among persons 65 years of age and over in 1999. 1950 death rates are based on the sixth revision of the International Classification of Disease (ICD–6), 1960 death rates on the ICD–7, 1970 death rates on the ICDA–8, and 1980–98 death rates on the ICD–9. 1998 (Comparability-modified) death rates use comparability ratios to adjust the rate to be comparable to records classified according to the ICD–10. 1999 death rates are based on the ICD–10. Comparability ratios for selected ICD revisions are available at www.cdc.gov/nchs/data/comp2.pdf. Death rates for chronic lower respiratory diseases are not shown prior to 1980 because of changes in medical terminology and the classification of these terms in the relevant ICD revisions. Cancer refers to malignant neoplasms. Stroke refers to cerebrovascular diseases. See Appendix II, Age adjustment, Cause of death, and Comparability ratio. See related *Health, United States, 2002,* tables 36, 37, 38, 39, and 42.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.

Data table for figure 28. Percent of deaths due to leading causes of death among persons 65 years of age and over: United States, 1999

Cause of death	Percent
Heart disease	33.8
Cancer	21.7
Stroke	8.3
Chronic lower respiratory diseases	6.0
Influenza and pneumonia	3.2
Other causes	27.0

NOTES: 1999 deaths are coded according to the tenth revision of the International Classification of Disease (ICD–10). Cancer refers to malignant neoplasms. Stroke refers to cerebrovascular diseases. See Appendix II, Cause of death. See related *Health, United States, 2002,* tables 37, 38, 39, and 42.

SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System.